C1 cancel.

$$u(x+w, y+w)=(((w_d i+w_d p-w_d x-w_n)u_L(y+w) +(w_d x+w_n-w_d i)u_R(y+w))m)//(w_d pz)$$

$$v(x+w,y+w)=(((w_d i+w_d p-w_d x-w_n)v_L(y+w) +(w_d x+w_n-w_d i)v_R(y+w))m)//(w_d pz)$$

.....(12)

IN THE CLAIMS:

Please amend claims 1-4 and 22-28 as follows:

1. (Three Times Amended) A method of synthesizing an interframe predicted image of a current frame from a reference image for encoding/decoding image information comprising:

C2 cont'd

a first step for calculating the values of motion vectors between said interframe predicted image and said reference image for four representative points at coordinates (i,j), (i+p, j), (i, j+q), (i+p, j+q) of said interframe predicted image (where i, j, p, q are integers, the horizontal and vertical components of the motion vectors of the representative points taking the values of integral multiples of 1/k where k is the hk power of 2, and hk is a non-negative integer),

a second step for calculating the motion vectors of a pixel in said interframe predicted image at coordinates (x+w, y+w) by performing bilinear interpolation/extrapolation on the motion vectors of the four representative points of an image where the pixel sampling interval in both horizontal and vertical directions is 1 and horizontal and vertical coordinates of sampling points are obtained by

adding w to integers (where w=wn/wd, wn is a non-negative integer, wd is a hw power of 2, hw is a non-negative integer and wn<wd), where said second step comprises:

a third step for calculating the horizontal and vertical components of motion vectors at the coordinates (i, y+w) as numerical values which are respectively integral multiples of 1/z (where z is the power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at the coordinates (i, j), (i, j+q), and for calculating the horizontal and vertical components of the motion vectors at the coordinates (i+p, y+w) as values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at coordinates (i+p, j), (i+p, j+q),

C 2 cont'd

a fourth step for calculating the horizontal and vertical components of the motion vectors of the pixel at the coordinates (x+w, y+w) as values which are respectively integral multiples of 1/m (where m is the hm power of 2, and hm is a non-negative integer) found by linear interpolation/extrapolation of two motion vectors at the coordinates (i, y+w), (i+p, y+w); and

a fifth step of calculating the pixel value of said pixel in said interframe predicted image of the coordinates (x+w, y+w) using said reference image and one of the motion vectors calculated in said fourth step.

2. (Three Times Amended) A method of synthesizing an interframe predicted image of a current frame from a reference image for encoding/decoding image

information comprising:

a first step for calculating the values of motion vectors between said interframe predicted image and said reference image for four representative points at coordinates (i,j), (i+p, j), (i, j+q) (i+p, j+q) of said interframe predicted image (where i, j, p, q are integers, the horizontal and vertical components of the motion vectors of the representatives points taking the values of integral multiples of 1/k where k is the hk of power 2, and hk is a non-negative integer),

a second step for calculating the motion vectors of a pixel in said interframe predicted image at coordinates (x+w, y+w) by performing bilinear interpolation/extrapolation on the motion vectors of four representative points of an image where the pixel sampling interval in both horizontal and vertical directions is 1 and horizontal and vertical coordinates of sampling points are obtained by adding w to integers (where w=wn/wd, wn is a non-negative integer, wd is a hw power of 2, hw is a non-negative integer and wn<wd), where the second step comprises:

C2, cont'd

a third step for calculating the horizontal and vertical components of motion vectors at the coordinates (x+w, j) as numerical values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at the coordinates (i, j), (i+p, j), and for calculating the horizontal and vertical components of the motion vectors at the coordinates (x+w, j+q) as values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at coordinates (i, j+q), i+p, j+q),

a fourth step for calculating the horizontal and vertical components of the motion vectors of the pixel at the coordinates (x+w, y+w) as values which are respectively integral multiples of 1/m (where m is the hm of power 2, and hm is a non-negative integer), found by linear interpolation/extrapolation of two motion vectors at the coordinates (x+w, j), (x+w, j+q); and

a fifth step of calculating the pixel value of said pixel in said interframe predicted image of the coordinates (x+w, y+w) using said reference image and one of the motion vectors calculated in said fourth step.

Cl 2 cont'd

3. (Twice Amended) A method of synthesizing an interframe prediction image according to Claim 1, wherein, when the motion vectors of a pixel at the coordinates (x+w, y+w) are found using (u0, v0), (u1, v1), (u2, v2), (u3, v3), which are the horizontal and vertical components of the motion vectors of the representative points at the coordinates (i,j), (i+p, j), (i, j+q), (i+p, j+q) multiplied by k, (uL(y+w), vL(y+w)) which are the horizontal and vertical components of the motion vectors at a point having the coordinates (i, y+w) multiplied by z, are found by calculating:

$$uL\ (y+w) = (\ (\ (q\cdot wd - (y-j)\cdot wd - wn)\ u0 + ((y-j)\cdot wd + wn)\ u2)z)////(q\cdot k\cdot wd),$$
$$vL(y+w)=(((q\cdot wd-(y-j)\cdot wd - wn)\ v0+((y-j)\cdot wd+wn)\ v2)\ z)////(q\cdot k\cdot wd)$$

(where //// is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of computational priority is equivalent to multiplication and division),

(uR(y+w), vR(y+w)) which are the horizontal and vertical components of the motion vector at a point having the coordinates (i+p, y+w) multiplied by z, are found by calculating:

$$uR(y+w)=(((q\cdot wd-(y-j)\cdot wd-wn)\,u1+((y-j)\cdot wd+wn)\,u3)\,z)\,////\,(q\cdot k\cdot wd)$$
$$vR(y+w)=(((q\cdot wd-(y-j)\cdot wd-wn)\,v1+((y-j)\cdot wd+wn)v3)z)////(q\cdot k\cdot wd),\text{ and}$$

(u(x+w), y+w), v(x+w, y+w)) which are the horizontal and vertical components of the motion vector of a pixel at the coordinates (x+w, y+w) multiplied by m, are found by calculating:

$$u(x+w,\,y+w)=((p\cdot wd-(x-i)\cdot wd-wn)\,uL(y+w)+((x-i)\cdot wd+wn)\,uR(y+w))m)//(p\cdot z\cdot wd)$$
$$v(x+w,\,y+w)=((p\cdot wd-(x-i)\cdot wd-wn)\,vL(y+w)+((x-i)\cdot wd+wn)vR(y+w))m)//(p\cdot z\cdot wd)$$

C2 contd

(where // is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and division).

4. (Three Times Amended) A method of synthesizing an interframe predicted image according to claim 2, wherein, when the motion vectors of a pixel at the coordinates (x+w, y+w) are found using (u0, v0), (u1, v1), (u2, v2), (u3, v3), which are the horizontal and vertical components of the motion vectors of the representative points at the coordinates (i, j), (i+p, j), (i, j+q), (i+p, j+q) multiplied by k,

(uT(x+w), vT(x+w)), which are the horizontal and vertical components of the motion vectors at a point having the coordinates (x+w, j) multiplied by z, are found by calculating:

$$uT(x+w)=(((p\cdot wd-(x-i)\cdot wd-wn)\,u0+((x-i)\cdot wd+wn)u1)z////(p\cdot k\cdot d),$$
$$vT(x+w)=(((p\cdot wd-(x-i)\cdot wd-wn)\,v0+((x-i)\cdot wd+wn)v1)z////(p\cdot k\cdot wd)$$

(where //// is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of computational priority is equivalent to multiplication and division),

C2 cont.

(uB(y+w), vB(y+w)) which are the horizontal and vertical components of the motion vectors at a point having the coordinates (x+w, j+p) multiplied by z, are found by calculating:

$$uB(x+w)=(((p\cdot wd-(x-i)\cdot wd-wn)u2+((x-i)\cdot wd+wn)u3)z////(p\cdot k\cdot wd),$$

$$vB(x+w)=(((p\cdot wd-(x-i)\cdot wd-wn)v2+((x-i)\cdot wd+wn)v3)z////(p\cdot k\cdot wd), \text{ and}$$

(u(x+w), y+w), v(x+w, y+w)) which are the horizontal and vertical components of the motion vectors of a pixel at the coordinates (x+w, y+w) multiplied by m, are found by calculating:

$$u(x+w, y+w)=(((q\cdot wd-(y-j)\cdot wd-wn)uT(x+w)+((y-j)\cdot wd+wn)uB(x+w))m)//(q\cdot z\cdot wd)$$
$$v(x+w, y+w)+(((q\cdot wd-(y-j)\cdot wd-wn)vT(x+w)+((y-j)\cdot wd+wn)vB(x+w))m)//q\cdot z\cdot wd)$$

(where // is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and by division).

22. (Three Times Amended) A method of synthesizing an interframe predicted images according to Claim 1, wherein,

when the number of pixels in the horizontal and vertical directions of the image is respectively r and s (wherein r and s are positive integers), and the pixels of the image lie in a range wherein the horizontal coordinate is from 0 to less than r and the vertical coordinate is from 0 to less than s, (u0, v0), (u1, v1), (u2, v2), (u3, v3) which is expressed by

$$u'(x, y)=(((s\cdot cd-cn-y\cdot cd)((r\cdot cd-cn-x\cdot cd)u00 + (x\cdot cd+cn)u01 + (y\cdot cd+cn)((r\cdot cd-cn-x\cdot cd)u02+(x\cdot cd-cn)u03))k)///(r\cdot s\cdot n\cdot cd^2),$$
$$v'(x, y)=(((s\cdot cd-cn-y\cdot cd)((r\cdot cd-cn-x\cdot cd)v00 +(x\cdot cd+cn)v01)+ (y\cdot cd+cn)((r\cdot cd-cn-x\cdot cd)v02+(x\cdot cd+cn)v03))k)///(r\cdot s\cdot n\cdot cd^2),$$

$u0=u'(i, j)$
$v0=v'(i, j)$
$u1=u'(i+p, j)$
$v1=v'(i+p,j)$
$u2=u'(i, j+q)$
$v2=v'(i,j+q)$
$u3=u'(i+p, j+q)$
$v3=v'(i+p,j+q)$

(where /// is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and division), are used as the k times horizontal and vertical components of motion vectors of representative points (i,j), (j+p, j), (i, j+q), (i+p, j+q), by using (u00, v00), (u01, v01), (u02, v02), (u03, v03) (where u00, v00, u01, v01, u02, v02, u03, v03 are integers), which are n times (where n is a positive integer) motion vectors at the corners of an image situated at the coordinates (-c, -c), (r-c, -c), (-c, s-c), (r-c, s-c) (where c=cn/cd, cn is a non-negative integer, cd is

C3 cont'd

C3 cancel.

a positive integer and cn<cd), whereof the horizontal and vertical components take the values of integral multiples of 1/n.

23. (Twice Amended) An image encoding method using a method of synthesizing an interframe predicted image according to claim 1 comprising:

a first step for synthesizing the interframe predicted image by performing motion compensation using a decoded image of a previously encoded frame and an input image of current frame,

a second step for generating a differential image between said interframe predicted image and said input image of said current frame,

C4 cont'd

a third step for transforming said differential image to obtain a transformed signal which is then encoded,

a fourth step for applying an inverse transformation to said transformed signal to produce a decoded differential image and

a fifth step for generating a decoded image of said current frame by adding said decoded differential image and said interframe predicted image.

24. (Twice Amended) An image encoding method using a method of synthesizing an interframe predicted image according to claim 22 comprising:

a first step for synthesizing the interframe predicted image by performing motion compensation using a decoded image of a previously encoded frame and an input image of current frame,

a second step for generating a differential image between said interframe

predicted image and said input image of said current frame

a third step for transforming said differential image to obtain a transformed signal which is then encoded,

a fourth step for inverse transforming said transformed signal to obtain a decoded differential image, and

a fifth step for synthesizing a decoded image of a current frame by adding said decoded differential image and said interframe predicted image, and

said first step comprises a step for detecting and encoding information relating to motion vectors at the corners of an image.

C1 cont'd

25. (Twice Amended) An image coding method according to Claim 23, wherein representative points comprise the corners of the image.

26. (Twice Amended) An image decoding method using a method of synthesizing an interframe predicted image according to claim 1, comprising:

a first step for inputting an interframe coding signal of an image frame which is to be decoded and motion vector information concerning said image frame,

a second step for transforming said interframe coding signal into a decoded differential signal,

a third step for producing an interframe predicted image from a decoded image signal of another image frame different in time from said image frame to be decoded and said motion vector information, and

a fourth step for adding the decoded differential signal and said interframe

predicted image to obtain a decoded image signal of said image frame which is to be decoded.

C'd cancl.

27. (Twice Amended) An image decoding method according to Claim 26, wherein plural representative points comprise corner points of an image used by reproducing information relating to the motion vectors of the representative points directly encoded as encoded data.

28. (Twice Amended) An image decoding method according to Claim 26, wherein plural representative points comprise corner points of an image.